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ACHIEVING AN OPTIMAL MEDIUM ALTITUDE  
UAV FORCE BALANCE  
IN SUPPORT OF COIN OPERATIONS

by

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## Contents

Disclaimer .....	i
Illustrations .....	iii
Introduction.....	1
Army Organic Medium-Altitude UAS .....	3
Background.....	3
Army's Justification of Organic UAVs .....	4
Other Views of Army Organic UAVs .....	6
UAS Missions, Roles and Requirements .....	10
UAS Roles and Missions .....	10
Army Medium-Altitude UAS Roles and Missions .....	11
JFC UAV Force Requirements .....	15
Doctrine.....	17
Joint Doctrine on UAS.....	17
Joint Doctrine on Command and Control .....	19
Recommendations.....	21
Conclusion .....	22

## **Illustrations**

Figure 1. Risk versus Time by Echelon.....	6
Figure 2. Manned-Unmanned (MUM) Teaming.....	13
Figure 3. Today's Operational Environment.....	18

## Introduction

The insistence on UAVs in today's counter-insurgency (COIN) fight is monumental. Lieutenant General David Deptula, Deputy Chief of Staff, Intelligence, Surveillance, and Reconnaissance (ISR), United States Air Force, states that the "demand for unmanned aerial vehicles (UAV) exceeds supply and will continue to exceed it – even after all the Services have built all their programmed UAVs."<sup>1</sup> Our joint forces at the strategic, operational, and tactical levels contend with the need for these capable assets. An *Army Times* article published in February 2008 reports, "The military's reliance on unmanned aircraft that can witch hunt and sometimes kill insurgents has soared to more than 500,000 hours in the air, largely in Iraq."<sup>2</sup> Likewise, Lt Col Larry Gurgainous, Deputy Director of Air Force Unmanned Aerial Task Force, states, "the demand far exceeds all the Defense Department's ability to provide (these) assets. I think it has to do with the type of warfare we're engaged in – it's heavy into ISR."<sup>3</sup> Furthermore, Secretary of Defense Robert Gates recently called upon the USAF to provide greater ISR support to ongoing, unconventional military operations.<sup>4</sup> Within this context and the context of pre-QDR 2010 roles and missions debate between the Services, the Services must achieve an optimal medium altitude UAV force balance in support of COIN operations.

The Army's validated requirement and procurement of the MQ-1C Sky Warrior Extended Range Multi-Purpose (ER/MP) Unmanned Aerial System (UAS) fuels a possible dilemma that the Air Force faces: encroachment of the ground forces into the "USAF-owned" air

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<sup>1</sup> Air Force News, *Air Force Link*, 25 April 2007.

<sup>2</sup> Baldor, *Army Times*, 6 February 2008.

<sup>3</sup> Ibid.

<sup>4</sup> Gates, Remarks at Maxwell-Gunter Air Force Base, 21 April 2008.

domain versus optimal UAS support to the joint forces commander (JFC). Therefore, finding the right balance between directly supporting ground forces and employing Air Force capabilities in other operational areas may be critical to achieving the JFC's desired end state.<sup>5</sup> Before the Office of the Secretary of Defense (OSD) attempts to answer this, it will have to consider the following assumption as fact: the Army's organic use of medium altitude UAVs in support of the warfighter in today's COIN fight is advantageous to the JFC and the warfighter.

This paper asks how the Army's use of organic medium altitude UAVs should affect Air Force UAV force structure requirements. My approach to this topic is to look at this from a strategy framework of means, ways, and ends. The means are Air Force and Army UAVs; the ways are doctrine; and the ends are support to the JFC and to the warfighter. This paper will review the Army's justification of organic UAVs, examine the roles and missions required of medium altitude UAVs in support of today's warfighter, and review current doctrine in the employment of medium altitude UAVs. Additionally, it will make recommendations and draw conclusions as to the impact to Air Force UAV force structure in the context of gathered research, Secretary Gates' comments, and the Army's procurement of the MQ-1C Sky Warrior ER/MP UAS.

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<sup>5</sup> AFDD 2-3 *Irregular Warfare*, 1 August 2007, 20.

## **Army Organic Medium-Altitude UAS**

### Background

Many have written and spoken on the implications of the Army's procurement of medium altitude UAVs in support of the ground commander and what it means to joint doctrine. Specifically, how it conflicts with the Air Forces' concept of centralized control, decentralized execution. Lieutenant General David Deptula, Deputy Chief of Staff, Intelligence, Surveillance, and Reconnaissance, United States Air Force, stated in his 2007 testimony to the United States House of Representatives Armed Services Committee,

The demand for ISR assets argues for "centralized control and decentralized execution" to optimize effects required to support in respect to the Joint Force Commander's highest priorities. It argues against assigning med- and high-altitude UAVs to individual units solely for that unit's use precluding their benefit to the entire theater joint fight. Accordingly, optimal warfighting ISR effectiveness is gained by prioritizing med- and high-altitude UAV allocation based on JFC guidance to the Joint Forces Air Component Commander (JFACC), who will task and command and control them where they are needed most, while deconflicting them from other on-going air operations and tracking them as part of air defense procedures...JFACCs provide the theater JFC a subordinate commander responsible for unifying air and space operations from all the Service components to achieve joint force objectives.<sup>6</sup>

The Air Force contends that the "Services should be moving toward increased interdependency, vice resourcing to achieve self-sufficiency."<sup>7</sup> Lieutenant General Deptula further stated, "A joint approach to optimal employment of these assets in any assigned combatant command in any region of the world is embedded in the JFACC structure."<sup>8</sup> Though the Air Force presents a logical position--one based on doctrine, the Joint Chiefs of Staff (JCS) reviewed the Army's

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<sup>6</sup> Deptula, Air Force ISR Programs, 7-8.

<sup>7</sup> Ibid., 5.

<sup>8</sup> Ibid., 8.



request for organic UAVs and approved a joint requirements document for a medium altitude unmanned aircraft system dedicated to direct operational control by its field commanders.<sup>9</sup>

Fittingly, the Army believes that by owning its own medium altitude UAVs, the division commander is better served. A Government Accounting Office report on the Army's Sky Warrior acquisition strategy supports the Army's request and JCS approval for organic UAVs. "A program office briefing noted that overall Iraq theater-level support was neither consistent nor responsive to Army's needs and that division level support was often denied or cancelled entirely."<sup>10</sup> As such, the Department of Defense believes its ISR Roadmap, as it relates to the decision to buy a unique platform...did recognize the difference in how the Army planned to operate the Sky Warrior as compared to the Air Force and its Predator and Reaper UAS.<sup>11</sup> This decision reinforced OPERATION Iraqi Freedom (OIF) after-action reports indicating UAVs organic to the ground commander best supported his operations.

#### Army's Justification of Organic UAVs

Colonel Jeffrey Kappenman, TRADOC System Manager for UAS, United States Army, recently published an article in *Joint Forces Quarterly* titled "Army Unmanned Aircraft Systems: Decisive in Battle." In this article, he succinctly lays out the Army's position on organic UAVs. The following excerpts are taken from his article.

- Army commanders require UAS that execute tactical reconnaissance, surveillance, and target acquisition (RSTA) in direct support of their ground maneuver.<sup>12</sup>
- Joint UAS are frequently not allocated to division and brigade combat team operations due to a lack of sufficient numbers of systems and higher priority theater, joint task force, JFACC, or other agency support mission requirements.<sup>13</sup>

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<sup>9</sup> GAO, Defense Acquisitions: Better Acquisition Strategy, 2.

<sup>10</sup> Ibid., 7.

<sup>11</sup> Ibid., 22.

<sup>12</sup> Kappenman, Army Unmanned Aircraft Systems: Decisive in Battle, 21.

<sup>13</sup> Ibid.

- Troops in contact with the enemy cannot afford to wait for a UAS request to move through the division staff, the corps staff, and the JFACC staff, then await reallocation decision-making by the JFACC leadership, and then, if approved, wait for the asset to travel en route to the ground forces. In addition, since these diversions of strategic assets to support tactical operations are not preplanned, the strategic UAS operator has not been integrated into the mission planning process and may not fully understand the tactical situation, scheme of maneuver, commander's intent, pre-planned effects or other assets available for teaming opportunities, thus reducing overall mission effectiveness.<sup>14</sup>
- By integrating UAS in direct support of ground forces, ground maneuver commanders can adequately develop the tactical situation and employ force consistent with the threat and reduce collateral damage while enhancing force protection.<sup>15</sup>
- Army UAS provide tactical commanders immediate responsiveness or eyes on target without lengthy processing, exploitation, and dissemination processes associated with joint ISR assets.<sup>16</sup>
- Since Army UAS are organic to their formations, commanders and staff planners fully integrate UAS operators into the mission planning process. This allows operators to 1) understand their role in the overall scheme of maneuver and commander's intent of the mission, 2) build habitual relationships with ground maneuver units and manned aviation assets, and 3) enable greater opportunities for cooperative engagement and manned-unmanned teaming.<sup>17</sup>

As with all new systems, it is important to understand how the Army justifies using its organic UAVs to enable its ground commanders. The following chart, Risk versus Time by Echelon (*Figure 1*), attempts to demonstrate that the lower the echelon, the more risk incurred, therefore the greater the requirement for dedicated, reliable, consistent support that is dynamically re-taskable and responsive to the fast-changing situation. The threat of loss is greater at the lower echelons and the time to react is noticeably decreased. Given this focus, the Army deems organic support at the division level, focused on Brigade Combat teams (BCT) and below as necessary. The ability for the division commander to weigh the fight and provide

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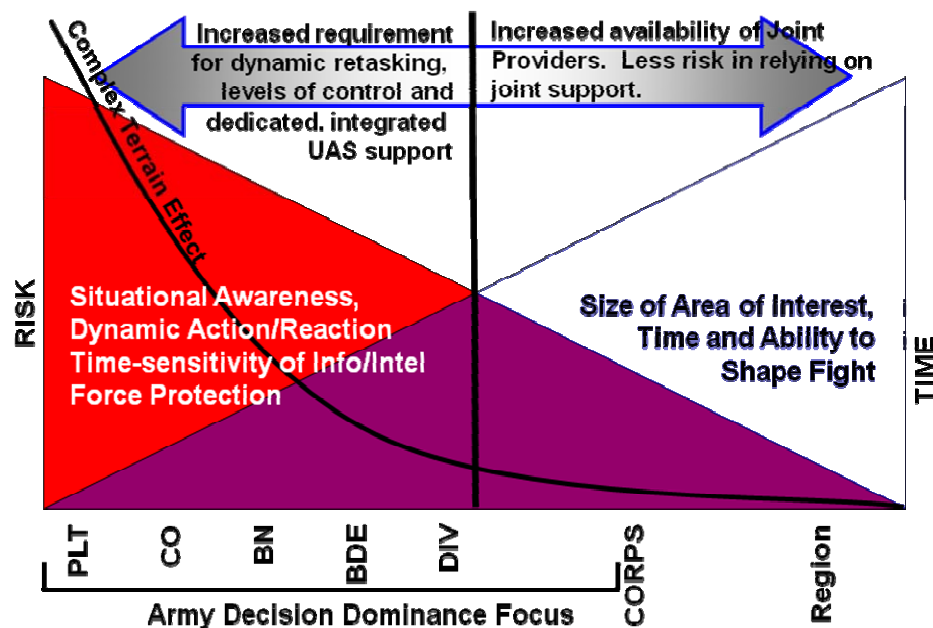
<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

responsive support to his BCTs is critical from launch through mission execution to recovery, then re-launch.<sup>18</sup>



- Risk decreases as echelon increases
- Time to react increases as echelon increases
- Complex terrain increases risk, need for SA, and time-sensitivity of intel/info
- Critical for lower echelons to have dynamic ability to rapidly confirm/deny reports

**Figure 1. Risk versus Time by Echelon<sup>19</sup>**

### AF Views of Army Organic UAVs

Many in the Air Force believe that the Army has it all wrong when looking at UAV air support requirements in support of COIN in today's operational environment. Colonel Charlie Bartlett, Air Force UAS Task Force, contends that "treating theater-capable UAS as local assets sub-optimizes resource allocation and combat effects for the Joint Commander" and the Services

<sup>18</sup> Kappenman, *Unmanned Aerial Systems* TRADOC Briefing, March 2008.

<sup>19</sup> Ibid.

would be better off executing the apportioned theater-capable assets to maximize JFC flexibility.<sup>20</sup> Major Travis Burdine in a recently completed Air Command and Staff College paper (April 2008), titled *Organic Army Unmanned Aircraft Systems: The Unhealthy Choice for the Joint Environment*, claims that theater centralized (non-organic) command and control of USAF and Army UAS maximizes the inherent strengths of both and meets the objectives of the JFC.”<sup>21</sup> Burdine stresses that the proposed implementation plan for Army UAS complicates the boundary between the JFACC’s Theater Air Control System and the Army Airspace Command and Control System (A2C2S), since the A2C2S is “optimized to manage low-altitude (<3000 feet) slow moving air assets such as rotary winged aircraft.”<sup>22</sup> Furthermore, Burdine claims the decentralized managed Army organic UAS will degrade the combat effectiveness of the joint force.<sup>23</sup>

The issue of Army use of organic medium altitude UAS becomes exacerbated when viewed in concert with joint interdependence of our Services. Lieutenant General Deptula, Air Force Deputy Chief of Staff, Intelligence, Surveillance, and Reconnaissance, defines joint interdependence as “the notion that each Service should hone its core competencies and rely on their sister Services to do the same. The goal is to provide an array of capes from which the JFC can choose, without suffering from either significant overlap that our department’s resources cannot sustain, or gaping holes that our warfighters cannot accept.”<sup>24</sup> Strengthening this argument, an *Air Force Magazine* article highlights two critical problems associated with service organic UAS:

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<sup>20</sup> Bartlett, Maximizing UAS capabilities for the JFC Briefing, 2008.

<sup>21</sup> Burdine, *Organic Army Unmanned Aircraft Systems*, viii.

<sup>22</sup> *Ibid.*, 21.

<sup>23</sup> *Ibid.*, 4-5.

<sup>24</sup> Deptula, Air Force ISR Programs, 5.

- First, other Services keep their UAVs “tethered” to their individual units. UAVs in direct support of land or naval forces are controlled by local commanders. This limits distribution of ISR data and restricts highest and best use of each UAV. It leads to skies crowded with up to 1000 UAVs, creating hazards. Airmen believe air assets are best controlled by a centralized commander, as is the case with USAF’s Predator and Global Hawk UAVs.<sup>25</sup>
- Second, the decentralized, unsynchronized approach to UAVs is inefficient, in both time and money. With so many institutions at work, there is inevitable duplication of effort and unfocused development of air and associated ground equipment, uplinks and downlinks, often with no compatibility.<sup>26</sup>

Not all Air Force officers believe that the Army’s use of organic medium altitude UAVs is a ghastly concept. Lieutenant Colonel Mike Pietrucha, USAF Warfare Center, Coalition and Irregular Warfare Center of Excellence, has taken a refreshing position in regards to Army organic air and Irregular Warfare. Lt Col Pietrucha asserts that the “Army has jumped into the lead (of Irregular Warfare) and is assuming traditional USAF roles and is poised to assume more.”<sup>27</sup> He also asserts that “tactical reconnaissance (TACRECCE) is almost an entirely Army mission, using Task Force ODIN and Army organic assets.”<sup>28</sup> However, Lt Col Pietrucha warns that “the Army has constructed a command and control (C2) structure that ignores componency or joint integration issues in favor of an Army-run kingdom.”<sup>29</sup> In the context of flexibility, Pietrucha anecdotally states that Army Aviation has proven to be more flexible than USAF aviation—the Air Force is focused on doing the same stuff in slightly different ways, while the Army has broken new ground.”<sup>30</sup>

The preceding views on Army organic UAS were aimed to give the reader insight as to the current debate and background on Army organic UAVs. Though the debates will continue, the Army’s current program of record to purchase the Sky Warrior to fulfill its JROC-approved

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<sup>25</sup> Dudney, *A Better UAV Flight Plan*, 1.

<sup>26</sup> Ibid.

<sup>27</sup> Pietrucha, All Over the Chart: A Few Thoughts from an IW Perspective, 22 February 2008.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

requirement must not continue to be a contentious point. The Services must rally and promote interoperability, especially with UAS. The Services have teamed up and created a Joint UAS Center of Excellence to do just that—create joint concept of operations (CONOPS) to ensure maximum UAS support for the joint warfighter. “The Army and Air Force have undertaken an initiative to develop a joint, comprehensive CONOPS to employ theater-capable UAS across the entire spectrum of conflict in support of JFC requirements. The UAS CONOPS will provide the JFC the operational flexibility to support requirements across the spectrum of conflict from centralized theater priorities to responsive direct support for ground units and interoperability gaps.”<sup>31</sup> To better understand the Services UAS missions and roles, let’s examine them.

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<sup>31</sup> Adamson and Martin, Briefing at Army-Air Force Warfighter Talks, 17 Jul 2008.

## **UAS Missions, Roles and Requirements**

### UAS Roles and Missions

In order to better understand and assess UAV employment in support of the JFC, let's examine UAS roles and missions. "UAS operations continue to support battlefield commanders in new and emerging ways as their staffs plan, coordinate, and execute operations. UAS with common data links and remote video terminals (RVTs) provide input to the common operational picture (COP) and enhance situational awareness (SA). UAS are currently integrated into every facet of military operations" such as:<sup>32</sup>

- Air Interdiction
- Artillery Fire Support
- Close Air Support
- Combat Assessment
- Communication Relay
- Force/Fleet Protection
- Intelligence
- Laser Operations
- Personnel Recovery
- Surveillance and Reconnaissance
- Target Acquisition
- Psychological Operations

Joint understanding of UAS general employment and missions is found in Multi-Service Tactics, Techniques, and Procedures (MTTP) 3-2.64 Manual, *UAS: The Tactical Employment of Unmanned Aerial Systems*. This MTTP manual provides a succinct background on UAS general employment and missions.

The United States (US) military has achieved operational successes from its use of a variety of unmanned aircraft and their sensors, communications, and armaments payloads. Unlike traditional intelligence assets, unmanned aircraft systems provide

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<sup>32</sup> MTTP 3-2.64 *UAS*, August 2006, I-2.

frontline tactical formations such as divisions, brigades, battalions, and companies with organic aerial capabilities that they can directly control. UAS have many features that also lend themselves to support of tactical operations. UAS can be sent into areas that are too dangerous for manned aircraft. Their endurance allows them to remain on station far longer than manned aircraft, thus providing continuous observation of the enemy. UAS full-motion video (FMV) is intuitive to many tactical warfighters who have used similar sensors in manned aircraft. Modern data links allow the video to be delivered to the end user in real time without intermediate film processing and imagery distribution. In global operations since 2002, US forces have employed UAS in integral roles for ISR, offensive strike, and other joint or Service-specific missions. The Army has used four systems to fly over 110,000 hours in 67,000 sorties (as of Aug 2006) to support company-through-corps-level operations. The Air Force has used its MQ-1 Predator UAV and MQ-9 Reaper UAV in a variety of ISR, close air support (CAS), armed strike, and other missions to fly over 5,800 sorties totaling more than 80,000 hours in flight (as of Aug 2006).<sup>33</sup>

### Army Medium-Altitude UAS Roles and Missions

The Army has tweaked the roles and missions of its UAS to better support its ground commander. “The employment of Army UAS is tailored to provide dedicated tactical RSTA, and other battlefield enablers such as communications relay and manned-unmanned (MUM) teaming, to ensure that ground maneuver commanders at division echelons and below have the timely combat information required to dominate the current and future fight.”<sup>34</sup>

Army UAS perform RSTA missions for joint operations, providing information on enemy forces and installations. RSTA operations may require both continuous surveillance and reconnaissance to provide timely indications and warning of an imminent or impending threat attack. UAS conducting RSTA missions provide commanders with current data on enemy terrain, organization, infrastructure and forces necessary for planning theater campaigns and major operations including monitoring the enemy centers of gravity, conventional attack capabilities, enemy offensive and defensive positions, deception postures, and battle damage assessment.<sup>35</sup>

Though the Army subscribes to the general roles and missions of UAS found in MTTP 3-2.64 UAS, it has adjusted the roles and missions of its Sky Warrior ER/MP UAS to better support the ground commander. “The Extended-Range Multipurpose (ER/MP) MQ-1C Sky Warrior

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<sup>33</sup> Ibid.

<sup>34</sup> Kappenman, *Army Unmanned Aircraft Systems: Decisive in Battle*, 23.

<sup>35</sup> Dept of Army FMI 3-04.155 C1, *Army Unmanned Aircraft System Operations*, 4 April 2006, D-1.



UAS (Hunter UAS replacement) provides dedicated support to assigned division combat aviation brigades, fires brigades, battlefield surveillance brigades, brigade combat teams, and other Army and Joint Force units according to a division commander's priorities."<sup>36</sup> "Its operators and system are completely integrated and synchronized into the full ground maneuver plan, providing assured dynamic responsive and simultaneous support to the ground tactical commander's planning and execution cycle."<sup>37</sup> "The Army is employing UAS as an extension of the tactical commander's eyes to find, fix, follow, facilitate, and finish targets. Army UAS missions are integrated into the maneuver commander's mission planning, at the start, as a combat multiplier in the contemporary operational environment."<sup>38</sup> MTTP 3-2.64 *UAS* lists the following Army Missions for UAS:<sup>39</sup>

- MUM Teaming
- Close Combat Attack (CCA) – Rotary Wing
- Security
- Surveillance
- Communication Relay
- ISR - Targeting – Decide Detect Deliver Assess (D3A) – Information Operations (IO) - C2
- Personnel Recovery (PR)
- Force Protection (FP)

Among the various missions that Army UAS accomplish, two are worthy of additional explanation—MUM and CCA. MUM teaming of Army helicopter, A2C2S, and UAS provides the enhanced capability to acquire, categorize, prosecute and/or hand-off, targetable information as shown in *Figure 2*. MUM also enhances situational awareness (SA) and the common

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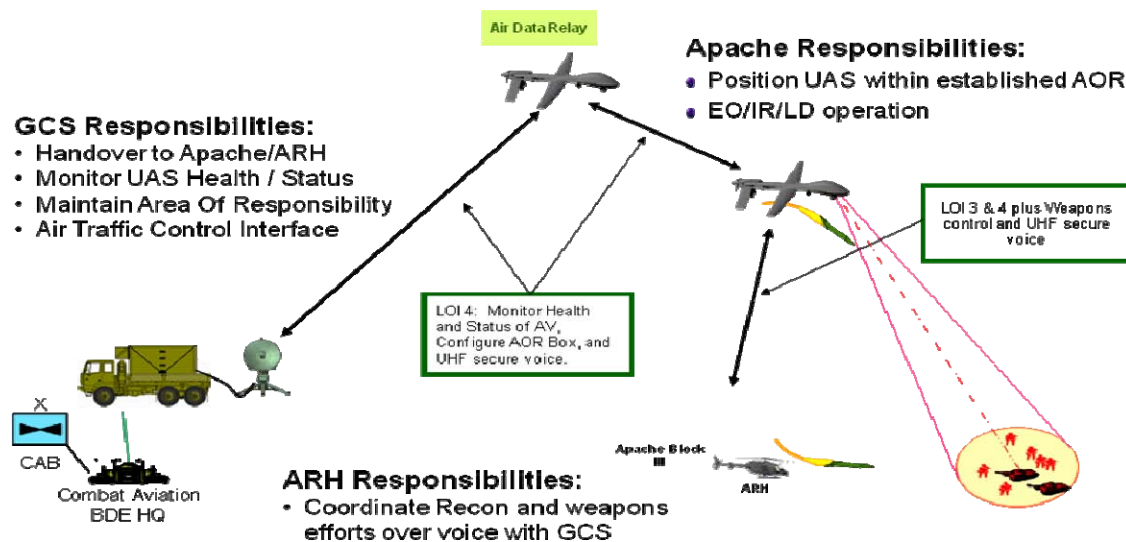
<sup>36</sup> US Army Information Paper, Warrior UAS, 2008.

<sup>37</sup> Sorenson, Army Airborne ISR Programs, 9.

<sup>38</sup> Kappenman, Army Unmanned Aircraft Systems: Decisive in Battle, 20.

<sup>39</sup> MTTP 3-2.64 *UAS*, August 2006, ALSA, I-7.

operational picture (COP) while reducing risk to ground operations, helping to set the conditions for the current and future forces success.<sup>40</sup>



**Figure 2. Manned-Unmanned (MUM) Teaming<sup>41</sup>**

Close Combat Attack is similar to Close Air Support (CAS). MTTP 3-2.64 UAS defines CCA as a hasty or deliberate attack in support of units engaged in close combat. During CCA, armed helicopters (and soon, Sky Warrior UAS) engage enemy units with direct fires that impact near friendly forces. Rapid target handover to/from UAS and CAS/CCA operations is crucial to rapidly identify and engage targets.<sup>42</sup>

### Air Force Medium-altitude UAS Roles and Missions

While the Army looks to its UAS to directly support the ground commander, the Air Force uses its medium altitude UAS, the MQ-1C Predator and MQ-9 Reaper, to support the broader goals of the JFC, thereby supporting the warfighter. “The MQ-1's primary mission is interdiction and conducting armed reconnaissance against critical, perishable targets. When the

<sup>40</sup> Dept of Army FMI 3-04.155 C1 Army Unmanned Aircraft Systems Operations, 4 April 2006, 1-2.

<sup>41</sup> Kappenman, Unmanned Aerial Systems TRADOC Briefing, March 2008.

<sup>42</sup> FMI 3-04.155 C1 Army Unmanned Aircraft Systems Operations, 4 April 2006, IV-19.

MQ-1 is not actively pursuing its primary mission, it acts as the Joint Forces Air Component Commander-owned theater asset for reconnaissance, surveillance and target acquisition in support of the Joint Forces commander.”<sup>43</sup> Slightly different than that of the MQ-1C, the MQ-9's primary mission is as a persistent hunter-killer against emerging targets to achieve joint force commander objectives. The MQ-9's alternate mission is to act as an ISR asset, employing sensors to provide real-time data to commanders and intelligence specialists at all levels.”<sup>44</sup>

MTTP 3-2.64 *UAS* lists the following USAF Missions for UAS:<sup>45</sup>

- Counterair
- Special Operations
- Counterland
- Close Air Support (CAS)
- Air Interdiction
- Dynamic Targeting (DT)/Time-Sensitive Target (TST)
- Strike Coordination and Armed Reconnaissance (SCAR)
- Intelligence
- Countersea
- Surveillance and Reconnaissance
- Information Operations (IO)
- Combat Search and Rescue (CSAR)
- Combat Support
- Navigation and Positioning
- Command and Control (C2)
- Force Protection (FP)

Although UAS have many roles and missions and can be employed at the different levels of war, COIN and counter-terrorism operations must be planned and executed at the lowest level. IW Guiding principles inherent are centralized control, assurance of assets, efficiency and

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<sup>43</sup> USAF Fact Sheet, MQ-1 Predator, 4 November 2008.

<sup>44</sup> USAF Fact Sheet, MQ-9 Reaper, 4 November 2008.

<sup>45</sup> MTTP 3-2.64 *UAS*, August 2006, ALSA, I-7 and I-8.

effectiveness, and decentralized execution.<sup>46</sup> We must keep this at the forefront as we examine JFC Force requirements, and then doctrine.

### JFC UAV Force Requirements

Army TRADOC and Air Force Air Combat Command, at the Army-Air Force Warfighter talks in July 2008, briefed that Joint Force requirements of UAVs are: 1) see first, understand first, act first, and finish decisively; 2) locate, identify, and engage full range of targets both independent from and in close proximity to ground forces; and 3) provide direct support for maneuver forces to include danger-close engagements.<sup>47</sup> Though the resource exists, the numbers do not.

The joint community has been unable to provide required coverage of unmanned aircraft systems in support of tactical operations.<sup>48</sup> Maj Gen (P) Jeffrey Sorenson, Deputy for Acquisition and Systems Management Office, Assistant Secretary of the Army, in his 2007 testimony to the House Armed Services Subcommittee on Air and Land Forces Hearing on Army Airborne ISR Programs) stated, “We do not have enough (*sic*) capability to meet warfighter requirements at the strategic, operational, and tactical levels. The Army will support any effort that increases focused and assured ISR support to ground maneuver commanders.”<sup>49</sup>

Though the Air Force has been able to produce over 30 Combat Air Patrols (CAP) through surge operations, this is still seen by the Army, and the Joint Chiefs, as not enough. The Air Force has recognized this limitation and is funded in FY09 for 40 CAPs, yet its goal is 50.<sup>50</sup>

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<sup>46</sup> ACC/A3YU, *MQ-1/9 IW Operations in CENTCOM AOR Brief*, September 2008.

<sup>47</sup> Adamson and Martin, Briefing at Army-Air Force Warfighter Talks, 17 Jul 2008.

<sup>48</sup> Kappenman, *Army Unmanned Aircraft Systems: Decisive in Battle*, 20.

<sup>49</sup> Sorenson, *Army Airborne ISR Programs*, 2.

<sup>50</sup> ACC/A3YU, *MQ-1/9 IW Ops in CENTCOM Briefing*, 2008.

In response to this less than optimal support of tactical operations, the Army is procuring Sky Warrior UAVs to fulfill current force needs for the platoon through the division level. The Army is looking to provide the commander with an unprecedented level of situational awareness and battlespace dominance focusing on RSTA, MUM teaming, communications relay, and weaponization.<sup>51</sup>

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<sup>51</sup> Kappenman, *Unmanned Aerial Systems* TRADOC Briefing, March 2008.

## Doctrine

### Joint Doctrine on UAS

UAS joint doctrine is absent. There is currently no multi-Service or Joint Publication (JP) that adequately addresses the tactical employment of UAS.<sup>52</sup> This is important to note because it may have contributed to the Army's procurement of organic medium altitude UAS.

Though joint doctrine for UAS use in support of the JFC and warfighter is lacking, MTTP 3-2.64 *Unmanned Aircraft System (UAS)* fills the joint doctrine void.<sup>53</sup> "The intent of MTTP 3-2.64 *UAS* is to establish TTP for the tactical employment of unmanned aircraft systems (UAS), addressing tactical and operational considerations, system capabilities, payloads, mission planning, and most importantly, multi-Service employment."<sup>54</sup>

MTTP 3-2.64 addresses not only the operational use of UAS as ISR collectors, but also looks at UAS in the tactical role. "Predators have been outfitted with Hellfire missiles, UAS have provided laser designation for Apache helicopters, and hand-launched UAS have located snipers, improvised explosive devices (IEDs), mortar firing points, and fleeing insurgents. UAS have enhanced the SA of unit-level commanders by providing more accurate and immediate battle damage assessment. The adaptability, versatility, and cost effectiveness of UAS continue to expand the commander's warfighting capability and have become indispensable to successful

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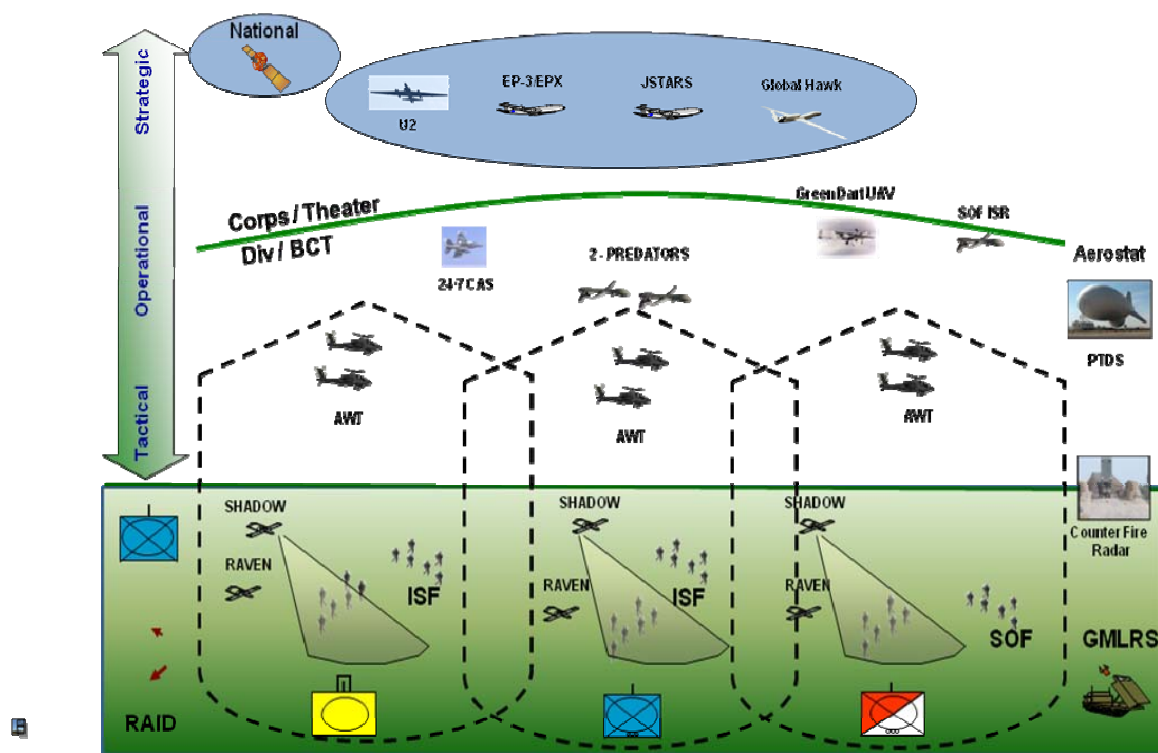
<sup>52</sup> JP 3-55.1, *JTTP for Unmanned Aerial Vehicles*, published 27 August 1993, went under revision in 1998 but the second draft of that revision was never approved. Thus, the publication was rescinded in January 2002 and is now obsolete for all Services.

<sup>53</sup> MTTP 3-2.64 *UAS*, August 2006, ALSA, vi.

<sup>54</sup> *Ibid.*

joint combat operations.”<sup>55</sup> (See *Figure 3* for a depiction of today’s operational environment involving UAS).

The use of UAS beyond the traditional role of ISR has flourished due to COIN. “All four Services employ UAS for a variety of tasks including fleet and perimeter security, tactical surveillance, weapons spotting, targeting, and weapons guidance as well as a host of other unit mission-specific tasks. This increased use of UAS in non-traditional roles has become a challenge for the Services.”<sup>56</sup>



*Figure 3. Today’s Operational Environment*<sup>57</sup>

<sup>55</sup> Ibid.

<sup>56</sup> Ibid.

<sup>57</sup> Petraeus, Iraq Trends to Neighbors Briefing, 2008.

## Joint Doctrine on Command and Control

A significant issue raised by the Army's procurement of medium altitude UAS is command and control of these platforms. Who will provide command and control of these platforms? Can the Army provide command and control of medium altitude UAS in accordance with joint doctrine?

To start, let's define command and control. "JP 1 *Doctrine for the Armed Forces of the United States* and JP 3-0 *Joint Operations* defines command and control (C2) as the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission."<sup>58</sup> With command and control's ultimate goal as unity of effort, it follows that "the airspace control system (ACS) must support JFC objectives and facilitate unity of effort."<sup>59</sup> Through centralized control of joint air operations, the JFACC provides unity of command, thus unity of effort.<sup>60</sup>

In today's environment, the JFACC provides command and control of medium altitude UAS in the battlespace.<sup>61</sup> Medium altitude UAS such as "MQ-1 Predator, MQ-9 Reaper, and Global Hawk are assigned missions in the JFACC's air tasking order (ATO) and integrated into the battlespace just as manned aircraft are integrated into the airspace control order (ACO)."<sup>62</sup> Furthermore, MTTP 3-2.64 *UAS* states that "UAS missions should be coordinated with the airspace control authority (ACA), to separate UAS safely from manned aircraft and to prevent engagement by friendly air defense (AD) systems. The approval authority for UAS missions

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<sup>58</sup> JP 3-0 *Joint Operations*, 13 February 2008, GL-8.

<sup>59</sup> JP 3-52 *Joint Doctrine for Airspace Control in the Combat Zone*, 30 August 2004, vii.

<sup>60</sup> JP 1 *Doctrine for the Armed Forces of the United States*, GL-11. Coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization" is unity of effort and the product of successful unified action

<sup>61</sup> JP 3-52, *Joint Doctrine for Airspace Control in the Combat Zone*, 30 August 2004, ix. The JFACC as the Airspace Control Authority coordinates and integrates the use of the airspace under the JFC's authority. The JFACC as the ACA develops policies and procedures for airspace control and for the coordination required among units within the joint operating area (JOA).

<sup>62</sup> MTTP 3-2.64 *UAS*, August 2006, ALSA, I-1.



operating below the coordinating altitude is the Army airspace command and control (A2C2) element.”<sup>63</sup>

An important takeaway from joint doctrine on command and control is that the joint force has a proven system, the JFACC, for executing air operations in today’s operational environment. Furthermore, the Army is relegated to providing C2 of organic assets below the coordinating altitude. With the Army expanding its medium-altitude UAS fleet, it will be incumbent for the JFACC and JFLCC to coordinate and adhere to proven joint doctrine lest we relearn some principles of joint operations like unity of command, economy of force and objective.

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<sup>63</sup> Ibid., II-12.

## **Recommendations**

The joint force must look at established doctrine as a framework to employ an increasing amount of Army air assets that support the tactical environment, yet reside in the medium-altitude airspace. With this in mind, the JFACC, through JFC authority, implements an air operations system that has stood the test of time. The Army must ensure that as it takes on more “air”, its A2C2S has a rigorous C2 infrastructure to accommodate the entire joint force. What this means is that trained controllers have the system capability to provide positive control of all aircraft working in its AO to ensure safe employment, unity of effort, and deconfliction of joint air operations.

If the Army is going to maintain command and control of its organic air in the JFACC AO, we cannot expect the coordinating altitude to remain at 3,000 feet. Should this happen, the joint force will need to raise the altitude of the ground commander’s AO in order for the A2C2S to provide effective and efficient C2. However, this may come at the expense of unity of effort in support of the JFC.

On the other hand, should the Army fail to build a robust C2 structure to accommodate joint air assets operating in JFACC airspace, then we should expect the Army to make available its medium-altitude UAS to the JFACC for command and control and unity of effort to better serve the interests of the JFC.

## Conclusion

Earlier, this paper asked how the Army's use of organic medium altitude UAVs should affect Air Force UAV force structure requirements. In driving to an answer, this paper summarized the Army's justification of organic UAVs, examined the roles and missions required of medium altitude UAVs in support of today's warfighter, reviewed joint doctrine in the employment of medium altitude UAVs, and looked at recommendations.

Well, the much anticipated answer is...the Army's use of organic medium altitude UAVs should not affect the force structure numbers of Air Force medium altitude UAVs. As long as the joint force maintains unity of command, unity of effort, and adheres to centralized control and decentralized execution, the Army's procurement and use of medium altitude UAVs for use in today's COIN fight does not change Air Force UAS force structure requirements. How is this advantageous?

Maj Gen (P) Jeffrey Sorenson, TRADOC System Manager for UAS, United States Army said it best, "we do not have enough capability to meet warfighter requirements at the strategic, operational, and tactical levels. The Army will support any effort that increases focused and assured ISR support to ground maneuver commanders."<sup>64</sup> If UAS numbers are increased, no matter the source, one can deduce that JFC capability is increased and the Army will likely get more direct support even if commanded and controlled by the JFACC. This is also a benefit to the Air Force and JFC because it allows the Air Force to focus more on the operational and strategic levels of war and dedicate the bulk of its medium altitude ISR in support of higher JFC

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<sup>64</sup> Sorenson, Army Airborne ISR Programs, 2.

priorities while maintaining an acceptable and sufficient level of tactical support to the ground maneuver commander. It's a win for all parties, but more importantly a win for the warfighter.

Secretary of Defense Gates stated “unconventional warfare requires unconventional thinkers”<sup>65</sup> The Army and Air Force should adhere to this mantra with respect to UAS operations and the unconventional part may be that the Army should continue to buy more medium altitude UAS and let the JFACC command and control these assets in support of the JFC.

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<sup>65</sup> Gates, Remarks at Maxwell-Gunter Air Force Base, 21 April 2008.

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